REMARKS

In the last Office Action the drawings were objected to. It was stated that the pair of mechanical operating members as called for in claim 1, the control means and sensor means as called for in claim 4 and the ring gear claimed in claim 10 must be shown or the feature cancelled from the claims. The drawings were further objected to since the element number 21 shown in figures 2 and 3 was not mentioned in the specification. A proposed substitute drawing for figure 1 has been submitted herewith. The proposed drawing is identical to original figure 1 but additionally shows in a schematic manner a pair of mechanical operating members as called for in claim 1. In view of the simple schemateic nature of the levers it is submitted that no new matter is being added. The ring gear as claimed in claim 10 is shown in figures 2 and 3 and is the ring gear 21 which has now been identified in the specification. The specification has been amended to correctly identify the elements in the drawings which constitute the control means and sensor means as called for in claim 4. Therefore it is submitted that the proposed drawing correction and the amendments to the specification overcome the objections noted in the last Office Action.

The specification has been amended to provide appropriate headings, to add the reference numeral 21 and to correct the terminology in several instances. The Abstract of the disclosure has also been amended to delete the second paragraph which is considered to be improper.

In the last Office Action claims 1-12 inclusive were rejected under 35 U.S.C. § 112, second paragraph, as being indefinite. Claims 1-3 and 12 were rejected under 35 U.S.C. § 102(b) as being anticipated by Amedei et al. US Patent 5,142,927. Claims 1-3 and 12 were rejected under 35 U.S.C. § 102(b) as being anticipated by Schmidt US Patent 1,630,076. Claims

4-11 inclusive were rejected under 35 U.S.C. § 103(a) as being unpatentable over a various combination of references.

Claims 1, 3, 4, 5, 8 and 12 have been amended to overcome the noted indefiniteness. Therefore the claims are now believed to be in full compliance with the requirements of 35 U.S.C. § 112, second paragraph.

The claimed invention relates to a unit for the servo-assisted operation of a motor-vehicle gearbox having a pair of mechanical operating member for selection and engagement, respectively, the combined movement of which brings about the engagement of one of the transmission ratios of the gearbox, the unit comprising remote gearshift means (gear lever) which can be operated directly by the driver and actuator means which can control the movement of the operation members on the gearbox in response to the position of the remote gearshift means, In order to reduce the space occupied by the unit in the engine compartment and to allow the unit to be easily interchanged with conventional mechanical gearbox operation units, according to the invention, the actuator means are arranged remote from the gearbox and are connected to the mechanical operating members by means of elongate mechanical transmission elements, such as push-pull cables.

In short, the essential features of the invention may be summarized in the following points:

a) a actuator means acting in response to the position of remote gearshift means;

b) actuator means remote from the gearbox;

c) actuator means connected to the operation members of the gearbox by means of elongate mechanical transmission elements.

US Patent 5,142,927 (Amedei et al.) relates to a unit for controlling the vehicle gearbox, the unit comprising a manual gear lever 2 movable by the operator, a flexible motion transfer unit 3 associated with the lever 2 and a pair of hydraulic actuators 4 which are arranged to control the position of respective levers 5 in response to the commands imparted by the operator through the manual lever 2 and the transfer unit 3. Each of the actuators 4 is arranged to control the sliding movement of a rod 31 which extends from the fixed castings 21 of the actuator and carries a respective lever 5. Although the gearbox is not shown in the figures, it is clear that the actuators 4, together with the levers 5, are mounted close to the gearbox.

Therefore, Amedei's operating unit is of the type in which the actuator means (the hydraulic actuators 4) controlling the mechanical operating members of the gearbox (the levers 5) are arranged close to the gearbox and are connected to said members not by means of elongate mechanical transmission elements, but directly through the rods 31 extending from the fixed castings 21 of the actuators 4 and carrying the levers 5. Such an arrangement belongs to the know servo-assisted gearboxes discussed in the introductory part of the description of the pending application, which suffer from the disadvantage of having the actuator devices located inside the engine compartment and thus require a suitable space in which to house them.

Claim 1 has been amended to specifically call for the elongate mechanical transmission elements as being flexible. The rods 31 of Amedei are clearly not flexible and accordingly claims 1 and 12 are further distinguished from the teachings of Amedei. In view of the foregoing

amendments and arguments it is clear that independent claims 1 and 12 are not anticipated by or obvious in view of the teachings of Amedei.

US Patent 1,630,076 (Schmidt) relates simply to a hand-operated control unit which enables the driver to engage the various gears by acting on a handle 6 for operation of a pair of flexible cables 19 connected to the operating members 25 for selection and engagement on the gearbox.

A unit of this kind does not provide a servo-assisted operation of the gearbox as recited in Claim 1 of the pending application, wherein the expression "servo-assisted operation" is to be intended as defining a mode of operation in which an actuator device is arranged for bringing about operations (in this instance, the shifting of flexible cables connected to actuating members on the gearbox) upon following commands imparted by the user through a remote control device (the gear lever), the actuator and the remote control device being not mechanically interconnected so as to allow power to be transmitted from one another. Moreover, no hint is given to the provision of actuator means capable of controlling the shifting of the flexible cable 19 as a result of the commands imparted by the driver on the handle 6, so as to enable a servo-assisted operation of the gearbox.

In view of the foregoing distinction it is clear that claims 1 and 12 are not anticipated by or obvious in view of the teachings of Schmidt.

US Patent 6,196,078 (DeJonge et al.) discloses a system for the extenal electronic control of an automatic transmission, according to which a stepper motor 26 arranged on the gearbox 21 is configured to selectively rotate an actuator rod 22 to shift the transmission between the

different gear positions in response to signals received from a control unit 23, which in turn is programmed to receive electrical signals from a shift lever 24" operable by the driver. A sensor arrangement is associated to the shift lever and operatively connected to the control unit to send input signals to the unit which are indicative of the position of the lever, that is, of the commands imparted by the driver.

Although DeJonge provides for the use of a control unit and sensor means configured to control the actuator device (the stepper motor) in dependence on the signals coming from the sensor means, his teaching is addressed to an operating unit which differs basically from the one of the pending application. In fact, the actuator device is not remote from the gearbox and is not connected to the operating members on the gearbox by means of elongate mechanical transmission elements (the expression "elongate mechanical transmission elements" as used in the pending application is clearly meant as referring to elements adapted to transmit a linear motion, whist the actuator motor rod 22 of Dejonge acts to transmit a rotational motion).

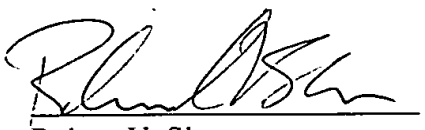
Since the patent to Dejonge discloses an operating unit similar to that of Amedei and suffers substantially the same drawbacks as Amedei as a reference it is not seen how claim 4 would be obvious in view of the teachings of Amedei as modified by Dejonge et al. The remaining secondary references which were applied in various combinations with either Amedei or Schmidt are not even directed to the subject matter of the claimed invention and the obviousness of any combination of features would only be apparent based on the present disclosure.

Since independent claims 1 and 12 are clearly not anticipated by or obvious in view of the teachings of Amedei et al. or Schmidt it is respectfully submitted that these claims are allowable as well as claims 3-11 inclusive which are dependent directly or indirectly therefrom. Therefore it is respectfully requested that claims 1-12 inclusive be allowed and the application passed to issue forthwith.

If for any reason the Examiner is unable to allow the application on the next Office Action and feels that an interview would be helpful to resolve any remaining issue, the Examiner is respectfully requested to contact the undersigned attorney for the purpose of arranging such an interview.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,



Robert V. Sloan
Registration No. 22,775

SUGHRUE MION, PLLC
Telephone: (202) 293-7060
Facsimile: (202) 293-7860

WASHINGTON OFFICE

23373
PATENT TRADEMARK OFFICE

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APPENDIX

VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE SPECIFICATION:

The specification is changed as follows:

Page 1, delete the heading "DESCRIPTION" and insert the heading

BACKGROUND OF THE INVENTION

Page 5, before the first paragraph insert the heading

SUMMARY OF THE INVENTION

Page 7, after the first paragraph insert the heading

BRIEF DESCRIPTION OF THE DRAWINGS

after the description of Figure 3 insert the heading

DETAILED DESCRIPTION OF THE INVENTION

amend the last paragraph to read as follows:

--A pair of mechanical operating members, for example, constituted by selection and engagement levers, E and S respectively, ~~(not shown in the drawings),~~ project from the gearbox casing B, also in known manner, their combined movement enabling the various transmission ratios of the gearbox C to be engaged.--

Page 8, amend the first two paragraphs to read as follows:

--A respective push-pull cable 3, 4, that is, a cable including a sheath 3b, 4b inside which a flexible cable 3a, 4a can slide, is preferably connected to each of these levers. The sheath 3b, 4b extends, in particular, between two opposed reaction elements one of which is formed, for example, by an abutment element 6 fixed to the casing B, whilst the other is advantageously

constituted by a fireproof partition P separating the engine compartment V and a passenger compartment A of the motor vehicle. The flexible cables 3a, 4a extend through the partition P and each is connected to the end of a respective shaft 13, 14 which extends from a ~~box~~ control unit 9 mounted in the compartment A in the vicinity of the partition P.

The ~~box~~ control unit 9 houses a pair of servomechanisms, each of which includes an electromechanical linear actuator for controlling the movement of the respective cable 3a, 4a, and only one of which is shown in Figure 2, in which it is indicated 9a.--

Page 9, amend the first full paragraph through to the first full paragraph on page 10 to read as follows:

--A set of teeth 21 is formed on the external surface of the casing 17 for engagement by a corresponding set of teeth of a first gear 25 of a reduction unit 23. The reduction unit 23 also comprises another gear 27 connected rigidly to the gear 25 and mounted coaxially therewith so as to be freely rotatable on a shaft 29 parallel to the axis of movement of the screw 15 relative to the internal thread 19, the gears 25 and 27 being fixed for rotation together. The gear 27 in turn meshes with a pinion 31 keyed to a drive shaft 33 of an electric motor 35 the axis of which is parallel to the shaft 13. The motor 35 is supported by a frame 37 having a pair of opposed main walls 37a, 37b connected to one another by fixing pillars, each wall 37a, 37b having a respective through-hole 38a, 38b through which the shafts 13 and 13a can extend.

The motor 35 is connected by means of wiring 40 to an electronic control unit 41 which in turn is connected by means of further wiring 42 to a ~~support~~ sensor unit 44 of a gearshift lever L. The lever L may, in particular, be movable so as to reach a plurality of positions arranged in a

grid-like configuration, for example, of the type corresponding to that of normal mechanical gearshifts.

Within the ~~support~~ sensor unit 44 there are sensor means which are not shown in detail since they are of known type or are within the capabilities of an expert in the art, and which can recognize the reaching, by the lever L, of each of its positions corresponding to the engagement of a gear of the gearbox C.

The signals detected by the sensors associated with the ~~support~~ sensor unit 44 are therefore transmitted by means of the wiring 42 to the electronic control unit 41 which processes them and generates corresponding signals for operating the actuators 9a. These signals are then transmitted to the motors 35 of the respective actuators 9a by means of the wiring 40. The reaching of one of the positions for the engagement of a transmission ratio by the lever L thus results in the engagement of the corresponding gear ratio of the gearbox C by means of the actuators in the ~~box~~ control unit 9.--

IN THE DRAWINGS:

A copy of a proposed substitute figure 1 is submitted herewith for approval.

IN THE CLAIMS:

The claims are amended as follows:

--1. (Amended) A unit for ~~the~~ servo-assisted operation of a motor-vehicle gearbox having a pair of mechanical operating members for selection and engagement, respectively, the combined movement of which brings about the engagement of ~~one of the~~ a selected transmission ratios of the gearbox, the unit comprising actuator means which can control the combined

movement of the mechanical operating members in response to the position of remote gearshift means of the gearbox, wherein the actuator means are remote from the gearbox and are connected to the mechanical operating members by means of elongate flexible mechanical transmission elements.

3. (Amended) The operating unit of Claim ~~1~~2, wherein the actuator means include control means for controlling the movement of the elongate mechanical transmission elements.

4. (Amended) The operating unit of Claim 3, further including an electronic control unit operatively interposed between the control means and sensor means which can detect the instantaneous position of the remote gearshift means of the gearbox, the electronic control unit being arranged to process the signals coming from the sensor means and to send operating signals to the control means in order to bring about the movement of the elongate transmission elements in a manner such that these elongate transmission elements bring about the engagement of ~~a~~the selected transmission ratio of the gearbox which corresponds to the instantaneous position of the remote gearshift means.

5. (Amended) The operating unit of Claim 4, wherein the remote gearshift means, the electronic control unit, and the actuator means are disposed in an environment separated from ~~the~~ an engine compartment of ~~the~~ a motor vehicle, the elongate mechanical transmission elements being disposed predominantly in the engine compartment.

8. (Amended) The operating unit of Claim 3, wherein the means for controlling the movement of the elongate elements are ~~of the~~ electromechanical ~~type~~.